

REMARKS

Reconsideration and the timely allowance of the pending claims, in view of the following remarks, are respectfully requested.

In the Final Office Action dated April 5, 2005, the Examiner rejected claims 15-21, under 35 U.S.C. §102(e), as being anticipated by Shiraishi '221 (U.S. Patent No. 6,842,221); rejected claims 15-21, under 35 U.S.C. §103(a), as being unpatentable over Aoyama '145 (U.S. Patent No. 6,697,145) in view of Shiraishi '221; rejected claims 1-14, under 35 U.S.C. §103(a), as being unpatentable over Shiraishi '221 in view of Nishi '491 (U.S. Patent No. 6,798,491); and rejected claims 1-14, under 35 U.S.C. §103(a), as being unpatentable over Aoyama '145 in view of Nishi '491.

By this Amendment, Applicants have amended claim 15 to provide a clearer presentation of the claimed invention and have amended the Specification to correct a minor informality. Thus, claims 1-21 are once again presented for examination of which claims 1, 8, and 15 are independent.

Applicants respectfully traverse the rejections of the claims, under 35 U.S.C. §102(e) and §103(a), for the reasons presented below:

I. Prior Art Rejections of Claims 15-21 Under §102(e) & §103(a).

Independent claim 15 has been amended to positively recite the use of an alignment system, disposed outside the conditioned chamber, that aligns the patterning device with the projected patterned beam of radiation by: (a) ***determining the position and orientation of the patterning device relative to a reference point on a carrier structure that supports the patterning device during the introduction of the patterning device*** into the conditioned chamber, and (b) ***adjusting the position and orientation of the patterning device based on the reference point***. These features are amply supported by the embodiments described in the Specification. (See, e.g., Specification, par. [00054] – [00055], [00058] – [00062]; FIGS. 2A-2D).

None of the references of record – not even Shiraishi '221 – teach the claimed combination of features recited by claim 15. Most notably, with respect to the alignment procedures taught by Shiraishi '221, Shiraishi '221 clearly states that after an external transport system transfers the wafer **W** onto a pre-alignment unit, the main controller **100** performs pre-alignment using *only* the shape of the wafer **W** as a reference. That is, the pre-alignment unit detects at least three points on the periphery of the wafer **W**, including the notch (V-shaped cut) of the wafer **W**, via optical sensors to measure the X-Y position deviation and angle deviation of the wafer **W**. (See, e.g., Shiraishi '221: col. 22, lines 3-15). Shiraishi '221 also states that a pre-alignment portion may also be provided for the reticle **R** in the reserve room **RI**. (See, e.g., Shiraishi '221: col. 38, lines 47-50).

Clearly, there is absolutely nothing in Shiraishi '221 that teaches determining the position and orientation of the patterning device relative to a reference point on a carrier structure that supports the patterning device during the introduction of the patterning device into the conditioned chamber, as required by claim 15. Nor is there anything in Shiraishi '221 that remotely teaches adjusting the position and orientation of the patterning device based on the reference point, as also required by claim 15. In fact, by only disclosing alignment based only on the shape of the wafer **W** as a reference, Shiraishi '221 teaches away from such features.

For at least these reasons, claim 15 cannot be reasonably construed as being anticipated by Shiraishi '221. Accordingly, Applicants request the immediate withdrawal of the prior art rejection of claim 15, under 35 U.S.C. §102(e).

Moreover, as best understood, none of the applied references, whether taken alone or in combination, cure such deficiencies or, for that matter, suggest the combination of features recited by claim 15. In particular, as discussed in the Amendment filed on March 2, 2005, Aoyama '145 merely discloses wafer pre-alignment via a positioning unit **17** that rotates the wafer to detect (i) the radial length of the wafer, (ii) the center position of the wafer, and (iii) the angle of the wafer cut portion. (See, e.g., Aoyama '145: col. 5, line 53 – col. 6, line 1; col. 6, line 65 – col. 7, line 8; col. 12, line 65 – col. 13., line 4; FIGS. 1-2). As such, Aoyama '145 clearly fails

to teach or suggest determining the position and orientation of the patterning device relative to a reference point on a carrier structure that supports the patterning device during the introduction of the patterning device into the conditioned chamber, as required by claim 15. Aoyama '145 further fails to teach adjusting the position and orientation of the patterning device based on the reference point, as also required by claim 15.

Of equal import is the fact that the Examiner acknowledged that Aoyama '145 does not disclose an alignment system disposed outside of the conditioned chamber for aligning the patterning device. The Examiner therefore relied on Shiraishi '221 to allegedly teach such a feature. However, as noted above, it is absolutely clear that the Shiraishi '221 reference is, at best, silent with respect to determining the position and orientation of the patterning device relative to a reference point on a carrier structure and adjusting the position and orientation of the patterning device based on the reference point, as also required by claim 15.

For at least these reasons, the combination of Shiraishi '221 and Aoyama '145 cannot be used in any way to render claim 15 unpatentable. Accordingly, Applicants request the immediate withdrawal of the prior art rejection of claim 15, under 35 U.S.C. §103(a).

Applicants additionally submit that because claims 16-21 depend either directly or indirectly from claim 15, claims 16-21 are also patentable by virtue of dependency, as well as for their additional limitations.

II. Prior Art Rejections of Claims 1-14 Under §103(a).

Much like the amendments to claim 15 and, as presented in the Amendment filed on March 2, 2005, independent claim 1 positively recites that the alignment system, which is disposed outside the conditioned chamber, is configured to position the at least one of the patterning device and the substrate in alignment with the projected patterned beam of radiation by determining position and orientation of the at least one of said patterning device and the substrate relative to a reference point on the carrier structure and adjusting the position and orientation of the at least one of the

patterning device and the substrate in accordance with the reference point. These features are amply supported by the embodiments described in the Specification. (*See, e.g.*, Specification, par. [00054] – [00055], [00058] – [00062]; FIGs. 2A-2D).

As similarly discussed above regarding the rejections of claim 15, there is absolutely nothing in Shiraishi '221 that teaches determining position and orientation of the at least one of said patterning device and the substrate relative to a reference point on the carrier structure, as required by claim 15. Nor is there anything in Shiraishi '221 that remotely teaches adjusting the position and orientation of the at least one of the patterning device and the substrate in accordance with the reference point, as also required by claim 1.

Moreover, as best understood, none of the applied references including Nishi '491, whether taken alone or in combination, cure the deficiencies noted above. In particular, the Nishi '491 reference clearly states that search alignment or pre-alignment operations are performed *only after* the wafers **W1**, **W2** have been loaded onto the respective wafer stages **WS1**, **WS2**. (*See, e.g.*, Nishi '491: col. 55, lines 9-11, 14-17, 20-22, and 59-63; col. 57, lines 28-33; FIGS. 7, 8). In addition, the alignment operations are only based on either the reference marks of fiducial mark plates **FM1**, **FM2** respectively disposed on the wafer stages **WS1**, **WS2**, or on search alignment marks respectively formed on the wafers **W1**, **W2**. (*See, e.g.*, Nishi '491: col. 55, lines 25-33, 63-67; col. 57, lines 31-37; FIGS. 7, 8).

Clearly, there is nothing in the Nishi '491 reference that suggests alignment operations prior to loading the wafers onto the wafer stages – much less, any mention whatsoever of aligning the wafers based on a reference point on a carrier structure. It will be appreciated by artisans of ordinary skill that a carrier structure defined in the claims as supporting the patterning device and/or the substrate *during the introduction of the same into the conditioned chamber* cannot be confused with the substrate holder that holds the substrate or the support structure that supports the patterning device. Thus, in stark contrast to the Examiner's contentions, the alignment operations of Nishi '491 are incapable of determining the position and orientation of the at least one of said

patterning device and the substrate relative to a reference point on the carrier structure, as required by claim 1.

For at least these reasons, the combination of Shiraishi '221 and Nishi '491 cannot be construed, in any way, to render claim 1 unpatentable. Accordingly, Applicants request the immediate withdrawal of the prior art rejection of claim 1, under 35 U.S.C. §103(a).

Regarding the Aoyama '145 reference, as discussed above, the Examiner has already acknowledged that Aoyama '145 fails to disclose an alignment system, disposed outside of the conditioned chamber, that determines the position and orientation of the at least one of said patterning device and the substrate relative to a reference point on the carrier structure, as required by claim 1. The Examiner therefore, once again, relied on Shiraishi '221 to allegedly teach such a feature. However, as noted above, it is absolutely clear that the Shiraishi '221 reference is, at best, silent with respect to determining the position and orientation of the patterning device relative to a reference point on a carrier structure – much less, adjusting the position and orientation of the patterning device based on the reference point, as required by claim 1.

For at least these reasons, the combination of Aoyama '145 and Shiraishi '221 cannot be construed, in any way, to render claim 1 unpatentable. Accordingly, Applicants request the immediate withdrawal of the prior art rejection of claim 1, under 35 U.S.C. §103(a).

Along these lines, Applicants note that, because claims 2-7 depend from independent claim 1, claims 2-7 are allowable by virtue of dependency as well as for their additional recitations. In addition because independent claim 8 recites features similar to claim 1, claim 8 is patentable for at least the reasons presented with respect to claim 1. And, because claims 9-14 depend from claim 8, claims 9-14 are also allowable by virtue of dependency as well as for their additional recitations.

III. Conclusion.

All matters having been addressed and in view of the foregoing, Applicants respectfully request the entry of this Amendment After Final Rejection, the Examiner's reconsideration of this application, and the immediate allowance of pending claims 1-21.

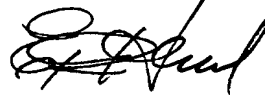
Applicants submit that the entry of this Amendment is proper under 37 C.F.R. §1.116 as the claim changes: (a) place the application in condition for allowance for the reasons discussed herein; (b) *do not require any further consideration* as the changes incorporate, in one form or another, features that were included in prior claim amendments and should have been already searched and considered; and (c) places the application in better form for an Appeal, should an Appeal be necessary.

Applicants' Counsel remains ready to assist the Examiner in any way to facilitate and expedite the prosecution of this matter.

Please charge any fees associated with the submission of this paper to Deposit Account Number **033975**, Order No. 081468/0307814. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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